

Application No. 09/848,767

Filed: 5/4/01

TC Art Unit: 3737

Confirmation No.: 6656

AMENDMENT TO THE CLAIMS

1. (Currently Amended) A method of imaging an object comprising:
providing a light distribution function, the function
having a scattering component and an absorption component;
directing light onto an object within a medium to be
imaged;
~~detecting light emitted by~~ traversing the medium containing
the object;
forming an electronic representation of the object with
the detected light; and
processing the electronic representation using the light
distribution function to form an image of the object and
measure the size of an object within the medium.

2. (Original) The method of Claim 1 further comprising directing
light onto the object, the light having a wavelength in the
range of 700 nm to 900 nm.

3. (Original) The method of Claim 1 wherein the object comprises
tissue such that the method further comprises forming an image
of the tissue.

4. (Original) The method of claim 1 further comprising providing
a light source, a detector, and a data processor connected to
the detector.

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5.(Original) The method of claim 1 further comprising providing the light distribution function including a series expansion.

6.(Original) The method of Claim 1 further comprising providing a collection time during which light is detected, the collection time being less than 1000 ps.

7.(Original) The method of Claim 4 wherein the step of providing a light source comprises providing a laser.

8.(Original) The method of Claim 4 wherein the step of providing detector comprises providing a streak camera.

9.(Original) The method of Claim 1 wherein the light distribution function comprises a point spread function.

10.(Original) The method of Claim 9 further comprising providing a plurality of weighting functions.

11.(Original) The method of Claim 1 further comprising determining a size of a cancerous lesion in tissue.

12.(Currently Amended) A system for imaging an object comprising:

a data processor having a light distribution function, the function having a scattering component and an absorption component;

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a light delivery systems that delivers light onto an object to be imaged;

a light sensor that detects light emitted by the object, the sensor being connected to the data processor such that an electronic representation of the object is formed with the detected light, the electronic representation being processed using the light distribution function to form an image of the object and determine a size of the object.

13.(Original) The system of Claim 12 further comprising directing light onto the object, the light having a wavelength in the range of 700 nm to 900 nm.

14.(Original) The system of Claim 12 wherein the object comprises tissue and further comprising a display connected to the data processor that displays an image of the tissue.

15.(Original) The system of Claim 12 further comprising a light source aligned with the detector.

16.(Original) The system of Claim 12 further comprising a light distribution function including a series expansion.

17.(Original) The system of Claim 12 further comprising a controller that controls a collection time during which light is detected, the collection time being less than 1000 ps.

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18.(Original) The system of Claim 15 wherein the light source comprises a laser.

19.(Original) The system of Claim 12 wherein the sensor comprises a streak camera.

20.(Original) The system of Claim 12 further comprising a scanner that provides relative movement between the object being imaged and the sensor.

21.(Original) The system of Claim 20 further comprising a controller that controls, the scanner, a gated detector, the light source and data processing.

22.(Currently Amended) The system of Claim 12 further comprising a plurality of light distribution functions.

23.(Original) The system of Claim 12 further comprising a fiber optical light coupler.

24.(Original) The system of Claim 12 further comprising a probe for insertion into the body to deliver light to tissue.

25.(Original) The system of Claim 12 further comprising a plurality of weighting functions.

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26. (Currently Amended) A method of imaging a patient comprising:
providing a light distribution function, the function having a scattering component and an absorption component;
providing an electronic representation of tissue within the patient; and
processing the electronic representation using the light distribution function to form an image of the object and determine the size of the object.

27. (Original) The method of Claim 26 wherein light collected from the patient has a wavelength in the range of 700 nm to 900 nm.

28. (Original) The method of Claim 26 further comprises forming an image of a cancerous lesion within the tissue.

29. (Original) The method of Claim 26 further comprising providing a data processor programmed with the light distribution function.

30. (Original) The method of Claim 26 wherein the light distribution function including a series expansion.

31. (Original) The method of Claim 26 further comprising providing a collection time during which light is collected from the patient the collection time being less than 1000ps.

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32. (Currently Amended) The method of Claim 26 further comprising
a detector ~~such as~~ including a streak camera.

33. (Currently Amended) The method of Claim 26 further comprises
providing ~~a light~~ a light distribution function having a
series expansion component.

34. (Original) The method of Claim 26 wherein the light
distribution function comprises a point spread function.

35. (Original) The method of Claim 34 further comprising
providing a plurality of weighting functions.

36. (Original) The method of Claim 26 further comprising
determining a size of a cancerous lesion in tissue.

37. (Original) The method of Claim 26 further comprising
collecting light with a fiber optic device.

38. (Original) The method of Claim 26 further comprising defining
an imaging volume having a plurality of voxels within the body
being imaged, each voxel having a weighting factor.

39. (Original) The method of Claim 26 wherein the light
distribution function includes a transport equation
approximation.

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40.(Original) The method of Claim 26 wherein the light distribution function defines a plurality of light paths having a cross-sectional area, the area being less than diffusion approximation of the area.

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